



## **Cleansing Pad**

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## **Related Application**

10           Applicant claims the priority of U.S. Provisional Application No. 60/484,786, entitled "Soap and wash sponge", filed on July 3, 2003, which is incorporated herein by reference.

## **Field of the Invention**

15           The present invention relates to cleansing pads and processes for forming such cleansing pads with a cleansing composition therein.

## **Background of the Invention**

          Cleansing pads and sponges have been used at home and in other applications for  
20   cleaning purposes such as for cleansing the human body, cleansing inanimate  
bodies/objects and the like. Typically, a user applies a cleansing compound to a pad or  
the body to be cleansed, and then the pad is rubbed over the object for cleaning action.  
The body is then rinsed off the cleansing compound.

A variation in the above process has been to create a cleansing pad by placing a cleaning agent such as bar of soap or liquid soap inside a sponge for washing the body in the shower or bath. Such a sponge includes a container forming an envelope for the soap, and openings through to the container interior allowing water access to the soap and the facile exiting of lather for washing purposes. However, such cleansing pads fall apart due to the weight of the soap and the water in the sponge, or leak out soap.

Further, in such cleansing pads, because the soap is in a reservoir, the lathering action may be limited because the lather must travel from within the reservoir through the sponge to the surface of the sponge for cleansing the body.

### **Brief Summary of the Invention**

The present invention addresses the above shortcomings. In one embodiment the present invention provides a cleansing device comprising a web of fibers, forming a pad, wherein the pad includes a cleansing agent therein. In one example of manufacturing such a pad, the cleansing agent is initially heated from solid form into liquid form, and distributed essentially throughout one or more portions of the pad in liquid form to substantially coat the fibers in said portions of the pad.

As such, in one version essentially only the exterior of the pad is coated with the cleansing agent. In another version, the exterior of the pad is coated with the cleansing agent and portions of the interior of the pad are impregnated with the cleansing agent

such that fibers of the pad are coated with the cleansing agent. In another example, essentially only portions of the interior of the pad are impregnated by the cleansing agent.

After application of the liquid cleansing agent, the pad is then allowed to cool  
5 such that the cleansing agent solidifies and remains solid at a desired range above at and above room temperature. Thereafter, in use, the pad is applied for cleaning an object in conjunction with a solvent such as water. The solvent dissolves the solidified cleaning agent into a solution that includes quantities of the solvent and dissolved cleansing agent for cleansing the object. The pad can be used in this manner multiple times without the  
10 need for application of other cleansing agent to the pad. As such, the pad is a self-contained, long lasting product that does not require the user to reapply cleansing agents to the pad with every use.

The present invention further provides apparatuses for processes of impregnating  
15 the pads with cleansing agents such as by dipping, soaking, infusion, misting, spraying and the like, such that fibers of the pad are coated with the cleansing agent according to the present invention.

While the apparatuses and methods have or will be described for the sake of  
20 grammatical fluidity with functional explanations, it is to be expressly understood that the claims, unless expressly formulated under 35 USC 112, are not to be construed as necessarily limited in any way by the construction of “means” or “steps” limitations, but are to be accorded the full scope of the meaning and equivalents of the definition

provided by the claims under the judicial doctrine of equivalents, and in the case where the claims are expressly formulated under 35 USC 112 are to be accorded full statutory equivalents under 35 USC 112. The invention can be better visualized by turning now to the following drawings wherein like elements are referenced by like numerals.

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### **Brief Description of the Drawings**

These and other features, aspects and advantages of the present invention will become understood with reference to the following description, appended claims and accompanying figures where:

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FIGS. 1A-B show example perspective and cross-section views, respectively, of a cleansing device pad according to an embodiment of the present invention;

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FIG. 2 shows a side view of an embodiment of a dipping apparatus for a process of manufacturing a cleansing device pad according to the present invention;

FIG. 3. shows a bottom/top view of an example of the dipping basket in FIG. 3;

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FIG. 4 shows a side view of an embodiment of another apparatus for a process of manufacturing a cleansing device pad according to the present invention;

FIG. 5 shows a top view of the apparatus of FIG. 4;

FIG. 6 shows a side view of a press in the apparatus of FIG. 4;

FIG. 7 shows a side view of an embodiment of another apparatus for a process of manufacturing a cleansing device pad according to the present invention;

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FIG. 8 shows a top view of the apparatus of FIG. 7;

FIG. 9 shows a side view of a press in the apparatus of FIG. 7;

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FIG. 10 shows a side view of an injector in the apparatus of FIG. 7;

FIG. 11 shows an example of injecting a pad with cleansing agent according to the present invention;

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FIG. 12 shows an example of spraying a pad with cleansing agent according to the present invention; and

FIG. 13 shows a side view of an embodiment of another apparatus for a process of manufacturing a cleansing device pad according to the present invention.

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### **Detailed Description of the Invention**

Referring to **FIGS. 1A-B**, in one embodiment the present invention provides a cleansing device 10 comprising a web of fibers 11, forming a pad, wherein the pad

includes a cleansing agent 12 therein. In one example of manufacturing the cleansing pad 10 according to the present invention, initially the cleansing agent 12 is heated from solid form into liquid form, and distributed essentially throughout one or more portions of the pad 10 in liquid form to substantially coat the fibers in said portions of the pad 10.

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As such, in one version essentially only the exterior of the pad 10 is coated with the cleansing agent 12. In another version, the exterior of the pad 10 is coated with the cleansing agent 12 and portions of the interior of the pad 10 are impregnated with the cleansing agent 12 such that fibers 11 inside the pad 10 are also coated with the cleansing agent 12. In another example, essentially only portions of the interior of the pad 10 are impregnated by the cleansing agent 12. Example processes for impregnating the pad 10 with cleansing agent 12 (e.g., dipping, soaking, infusion, misting, etc.) such that fibers 11 of the pad 10 are coated with the cleansing agent 12 according to the present invention are provided further below.

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After application of the cleansing agent 12, the pad 10 is then allowed to cool such that the cleansing agent 12 solidifies and remains solid at a desired range above at and above room temperature. Thereafter, in use, the pad 10 is applied for cleaning an object in conjunction with a solvent such as water. The solvent dissolves the solidified cleaning agent 12 into a solution that includes quantities of the solvent and dissolved cleansing agent for cleansing the object. The pad 10 can be used in this manner multiple times without the need for application of other cleansing agent to the pad. As such, the

pad 10 is a self-contained, long lasting product that does not require the user to reapply cleansing agents to the pad with every use.

In one example, the pad 10 comprises a synthetic sponge and/or natural sea  
5 sponge that is infused/layered/dipped etc., with a cleansing agent 12 or compound such as soap, as described by example further below. It is to be understood that in this description, sponge and soap are used only as examples of the pad 10 and cleaning agent 12, respectively. Therefore, the present invention is not limited to such examples.

10 The sponge 10 can be internally infused and/or externally coated with the soap 12. In another example, the sponge 10 comprises, e.g., a polysynthetic porous material, a naturally occurring sea sponge, etc. The synthetic sponge 10 can be anti-bacterially treated to prevent the growth of bacteria once the sponge becomes moist. Synthetic colorant can be applied to the sponge 10 as desired. Other colorants may include food  
15 color, MICA, cosmetic MICA, cosmetic dye, minerals, spices and herbs.

In use, application of water and applied pressure creates lather from the soap 12 that was impregnated or coated in the sponge 10. For example, the user places the sponge 10 under or in water, and applies pressure with hand whereby a foamy lather will  
20 ensue from the water dissolving the soap 12. Then the sponge 10 can be applied directly to human body or other objects for washing. After washing, the user slightly squeezes the sponge 10 to wick away excess water and sets it aside, or hangs it with a loop-clamp manually attached to sponge, for the sponge 10 to dry. In one example version, the loop-

clamp comprises a plastic loop approximately 2 inches in length ending in a metal flat nosed clamp. The user squeezes the clamps ~~metal~~ with fingertips and attaches to the sponge (e.g., sponge ball or dye cut).

5           The sponge 10 can be used in this manner multiple times without the need for application of other soap to the sponge 10. As such, the sponge 10 is a long lasting product that does not require the user to reapply soap to the sponge with every use. In one example, with 6 Oz. soap impregnated in the pad 10, the pad 10 can be used thirty times once a day for about 10 to 15 rubs per path. In another example, with 7 Oz of soap  
10   impregnated in the pad 10, the pad 10 can be applied for thirty day, once a day, wherein approximately 0.2 to 0.3 Oz of soap in the pad 10 are used per application.

          In one example, the soap base may contain 100% natural soap without detergents/surfactants/sulfates. In another example, an extra clear base is used which has  
15   a very small amount of detergent. Other example compounds that may be included in the soap 12 include one or more of the following in selected quantities: Saponified Vegetable Oils (mainly coconut), Glycerine (kosher, of vegetable origin), Purified Water, Moisturizer, Emulsifier, etc.

20           Other natural and/or synthetic cleansing agents/compounds besides soap which can be applied to the pad 10 in the following example (and other) processes, and manufacturing apparatus, according to the present invention, maybe utilized.

Referring to **FIG. 2**, an embodiment of an apparatus 100 for manufacturing the cleansing device 10 according to the present invention is shown. The cleansing agent 12, such as soap that is in solid form at e.g. room temperature, is heated to about 150 to 200 °F and maintained in liquid form in a soap vessel 102 by electric or gas burning heating elements 104. Alternatively, the soap 12 can be heated into liquid elsewhere and transferred to the vessel 102 via a pipe 106. One or more sponges 10 are placed in a slotted basket 108 suspended by a support 109, wherein the basket 108 is lowered into the liquid soap 12, such that the sponges 10 are submerged in the liquid soap 12 and allowed to absorb the liquid soap 12.

The duration of submerging the sponges 10 can be varied to control the amount of liquid soap 12 absorbed by the sponges 10. For example, a short duration for submerging the sponges 10 in the liquid soap 12 essentially coats only the exterior of the sponges 10 with the liquid soap 12. Longer periods of submersing the sponges allows coating of the interior fibers of the sponges 10 as well. Other factors that can be varied to control the amount of coating of the fibers in the pads (e.g., sponges) 10 include varying viscosity of the liquid soap 12, the porous nature of the pads 10, the material of the pads 10, etc. For example, larger pores of the pad 10 soak up more liquid soap, whereas smaller/tighter pores of the pad 10 allow for less liquid soap to be soaked up.

Alternatively, in the above process the sponges 10 are squeezed between upper and lower squeezing plates 110, 112 in the basket 108, and the pressure is slowly released for the sponges 10 to absorb the liquid soap 12 while submerged therein, to coat the

fibers inside each sponge 10. When the pressure is released, each sponge 10 holds the absorbed liquid soap 12 therein. In either case, the amount of liquid soap 12 is pre-measured into the vessel 102 where the sponges 10 are submerged.

5           Then, the basket 108 is raised via the support 109 to take the soaked sponges 10 out of the liquid soap 12 and the sponges 10 are allowed to cool for the liquid soap 12 to solidify therein, and complete formation of the processed cleansing pads (processed pads) 10.

10           As shown by example bottom view in **FIG. 3**, the basket 108 can be a flat bottomed, open slotted basket which holds several pads 10. The sides 114 of the basket 108 are equal in height and length to the walls 105 of the soap holding/warming vessel 102. The basket 108 along with the pads 10 are immersed in the liquid soap 12 in the vessel 102, wherein the pads 10 will remain floating, but in an even fashion, as the  
15           surrounding area around each pad 10 allows little movement. Application of selected amount pressure to the pads 10 via the plates 110, 112, allows measured absorption of the liquid soap 12 by the pads 10 when the pressure is released.

          When the basket 108 is raised out of the vessel 102, excess liquid soap 12 drips  
20           off the pads 10. In one example, each pad 10 retains e.g. about 1 to 8 oz. of liquid soap 12. This amount can be selected by controlling/measuring by the temperature/viscosity of the liquid soap 12.

The basket 108 is then transferred to a drying/cooling area for a specified duration of time for the liquid soap 12 to solidify in the pads 10 based on the selected characteristics of the soap 12. Other methods of dipping/submerging the pads 10 are possible within the scope of the present invention.

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In one example, a pad 10 can be a sponge 4 ½ inches in length/width that is dipped/submerged into colored, plain opaque or clear liquid cleansing agent 12, wherein the cleansing agent 12 cools to a solid form on the exterior and/or interior of the pad 10. The pad 10 and cleansing agent 12 can be selected such that the processed pad 10 is suitable for various applications such as human bathing or washing objects of any sort such as dishes, appliances, surfaces, vehicles, etc. The processed pads 10 can also be scented with oils fragrance, oils, etc. as desired. -

Referring to **FIGS. 4-6**, an embodiment of another apparatus 200 for manufacturing the cleansing device 10 according to the present invention is shown. As shown in **FIG. 4**, the cleansing agent 12, such as soap is heated to about 150 to 200 °F and maintained in liquid form in a soap vessel 202. One or more sponges 10 are placed in holding caps 204 on a table 206.

As shown in the top view of the apparatus 200 in **FIG. 5**, liquid soap 12 is transferred into each holding cap 204 via respective transfer tubes 208 from the vessel 202 by the action of a pump 210. A dosimeter 203 allows control of the amount of

liquid soap 12 that is transferred to each holding cap 204 via the corresponding transfer tube 208 from the vessel 202.

As shown in **FIG. 6**, a press 212 such as an arbor press, when lowered,  
5 compresses the sponge 10 in each holding cap 204, wherein thereafter slow release of pressure from the sponges 10 allows each sponge 10 to absorb liquid soap 12 from the respective holding cap 204. Then, the sponges 10 are removed from the holding caps 204 and allowed to cool/dry in a similar fashion described above for the liquid soap 12 to solidify.

10 The press 212 includes press plates 213 that correspond to the holding caps 204. The press plates are attached to a support 215 that slides up and down a shaft 217 by rotary action of a lever 219 as shown by arrow 221. The lever 219 can be spring loaded to resist downward motion of the press plates 213 towards the holding caps 204.

15 The temperature/viscosity of the liquid soap 12, the amount of compression of the sponges 10, the composition of the sponges 10, the amount of liquid soap 12 in each holding cap 204 and pressure from the pump 210, are among controllable parameters that determine the characteristics of the processed sponges 10. The sponges 10 can be placed  
20 into, and removed from, the holding caps 204 manually or by an automated process.

Further, the press 212 can be operated manually or by an automated process. In one example, when a sponge is compressed in holding cap 204, the clearance between the

corresponding press plate 213 and bottom of the holding cap 204 is about 1.5 inches. The table 206 can be 30 inches high and have a 40 inch by 40 inch top surface for supporting the holding caps 204 and the press 212.

5 Referring to the apparatus 300 in **FIGS. 7-10**, in a variation of the above apparatus 200, an infusion process is used to infuse liquid soap 12 into the sponges 10 within holding caps 204. As shown in the side view and top view of the apparatus 300 in **FIGS. 7 and 8**, respectively, the transfer tubes 208 are connected from the vessel 202 via the dosimeter 203 to injectors 302 (e.g., hollow needles) that are installed on the support  
10 215 of the press 212.

When the press 212 is lowered (**FIG. 9**), the injectors 302 are inserted into sponges 10 in respective holding caps 204. Then, the liquid soap 12 is pumped into the sponges 10 with the injectors 302 for infusion therein.

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In addition to infusion, optionally the sponges 10 may be compressed by the press 212, as described above, wherein slow release of pressure from the sponges 10 allows each sponge 10 to further absorb liquid soap 12 from the injectors 302. Then, the injectors 302 are withdrawn from the sponges 10 by raising the press support 215, and the  
20 sponges 10 are removed from the holding caps 204 and allowed to cool/dry in a similar fashion described above for the liquid soap 12 to solidify.

The temperature/viscosity of the liquid soap 12, the optional amount of compression of the sponges 10, the composition of the sponges 10, the amount and pressure of liquid soap 12 from each injector 302, are among controllable parameters that determine the characteristics of the processed sponges 10.

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As shown by example in **FIG. 11**, each injector 302 has several openings 304 thereon, large enough to release the liquid soap 12 into each sponge 10 in a spread. **FIG. 11** shows an example injector 302 partially inserted into a sponge 10 on a holding cup 204. Further, more than one injector 302 can be connected to the press 212 for insertion of multiple injectors 302 into each sponge 10, resulting in faster and/or better infusion/distribution of liquid soap 12 into each sponge 10. In one example, an injector 302 is about 4 inches long, about 0.07 inches in inner diameter, with about 15 openings on its sidewalls.

15 In another embodiment, shown in **FIG. 12**, instead of injectors, spraying nozzles 400 are used to spray liquid soap 12 onto the exterior of the sponges 10. The amount of sprayed liquid soap 12, the spray pressure and the viscosity/temperature of the liquid soap 12 and the material of the pads/sponges 10, are among parameters that can be adjusted to control amount of liquid soap 12 absorbed by the sponges 10 and how far the liquid soap 12 travels into the interior of the sponges 10. Further, each sponge 10 can be first compressed, and then sprayed, with decompression during or after spraying, to control the amount of liquid soap absorbed by each sponge 10.

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Referring to **FIG. 13**, in another example infusion/impregnation apparatus 500 according to the present invention, a conveyor belt 502 leads pads 10 into a clamping system 504 in step A. Then in step B, each pad 10 is clamped off the belt 502 using a pair of clamps 506 (e.g., one clamp from above and one clamp from below). In step C,  
5 the clamped pad 10 is then side injected with an injector 508 (e.g., injector 302 in FIG. 10) with preheated liquid soap 12 from a vessel 510 via tubing 512 by the action of a pump 514 and dosimeter 516.

As shown by example in FIG. 10, each injector has large enough openings to  
10 release the liquid soap 12 into each pad 10 in a spread, wherein the liquid soap 12 is maintained at a viscosity/temperature sufficient to prevent leakage out of the pad 10 due to gravity.

Optionally, the clamps 506 may compress the pads 10, wherein slow release of  
15 pressure from the pads 10 allows each pad 10 to further absorb liquid soap 12 from the injector 508. Then the injector 508 is withdrawn from the pad 10.

After the pad 10 has been injected, optionally it is moved to a misting system where it is misted/spayed with liquid soap (e.g., 1oz) by a nozzle 518 (e.g., nozzle 400 in  
20 FIG. 12), in step D.

The liquid soap 12 is fed to the nozzle 518 from the vessel 510 via tubing 522 by action of a pump 524 and dosimeter 526. The misted pad 10 is then dropped back onto

another conveyer belt 528 in step E and taken off to a nearby drying rack to dry/cool as described above in step F.

5       The temperature/viscosity of the soap, the amount of compression of the pads, the composition of the pads, the amount and pressure of liquid soap in each injector and pump pressure, are among controllable parameters that determine the characteristics of the processed pads.

10       The above processes and apparatuses accommodate various pads 10 such as sponges comprising natural sea sponges and synthetic materials such as polyester, cotton, nylon etc. Preferably, the pads 10 are porous. The above processes and apparatuses accommodate various cleansing agents 12 that are in solid form around a first ambient temperature (e.g., room temperature) and turn into liquid form when heated to another temperature.

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      In one example, a processed pad 10 according to the present invention provides the ability to hold the soap 12 for up to one month on an every day usage. The user has an all-in-one soap impregnated sponge instead of separate wash cloth/sponge and soap.

20       The material of the pad 10, the amount of cleansing agent 12 in the processed pad 10, the characteristics of the cleansing agent 12, the process of impregnating the pad 10 with the cleansing agent 12 are among factors that can be selected for desired

characteristics such as number of times the processed pads 10 can be reused, the application, etc.

Other pad materials may include all synthetic sponge materials, woven and non-  
5 woven materials, all natural including cotton and loofah based. Further, a scenting process may include use of fragrance oils, essential oils, perfumes, herbs and spices.

Other options for the cleansing agent 12 include PA-8s-sodium octane sulfinite liquid or AS-90 sodium olefin sulfinate or c14-16-powder agent, for rolling on the sponge  
10 10. More additives to the soap base include shea butters, almond oil, clays, cocabutters. Other melting temperatures for the soap 12 can be e.g. 130-150 °F, wherein solidification starts at about 120 °F. For different size pads, amount of soap used varies. For example, for example: 1oz. for small sponges, 4oz. for medium sponges, 7-8ozs. for large sponges, etc. Further, different amounts of soap in one sponge can last for different  
15 number of uses. For example, 7oz for up to 30 days, once per day; 4oz for up to 2 weeks, once per day; and 1oz for up to 1 to 2 weeks, once per day.

Many alterations and modifications may be made by those skilled in the art without departing from the spirit and scope of the invention. Therefore, it must be  
20 understood that the illustrated embodiment has been set forth only for purposes of example and that it should not be taken as limiting the invention as defined by the following claims. For example, though in the example in the above description the pad is

impregnated with a cleansing agent, other agents instead of, or in addition to, can be used to impregnate the pad.

The words used in this specification to describe the invention and its various  
5 embodiments are to be understood not only in the sense of their commonly defined meanings, but to include by special definition in this specification structure, material or acts beyond the defined meanings. Thus if an element can be understood in the context of this specification as including more than one meaning, then its use in a claim must be understood as being generic to all possible meanings supported by the specification and  
10 by the words itself.

The definitions of the words or elements of the following claims are therefore, defined in this specification to include not only the combination of elements which are literally set forth, but all equivalent structure, material or acts for performing substantially  
15 the same function in substantially the same way to obtain substantially the same result. In this sense it is therefore contemplated that an equivalent substitution of two or more elements may be made for any one of the elements in the claims below, or that a single element may be substituted for two or more elements in a claim.

20 Insubstantial changes from the claimed subject matter as viewed by a person with ordinary skill in the art, now known or later devised, are expressly contemplated as being equivalent within the scope of the claims. Therefore, obvious substitutions now or later

known to one with ordinary skill in the art are defined to be within the scope of the defined elements.

The claims are thus to be understood to include what is specifically illustrated and  
5 described above, what is conceptually equivalent, what can be obviously substituted and  
also what essentially incorporates the essential idea of the invention.